Claim Amendments

1. (Original)

A transfer apparatus for shifting specimen carriers between two conveyors of a dual conveyor track, the track of the type having first and second parallel, spaced apart conveyors with upper surfaces within a single plane, the conveyors operable in the same longitudinal direction, the transfer apparatus comprising:

a frame connected to the track for supporting an operable shuttle;

a shuttle operably connected to the frame to move transversely between the conveyors and generally perpendicular to the movement of specimen carriers on the conveyors;

a first stop member on said frame, projecting partially over the first conveyor;

a second stop member on said frame, projecting partially over the second conveyor;

said shuttle having a pair of parallel arms spaced apart a distance to receive a specimen carrier therebetween;

said shuttle operable to a first "hold" position with the shuttle arms located such that a specimen carrier therebetween is in contact with the first stop member, to thereby prevent downstream movement of a carrier on the first conveyor;

said shuttle operable to a first "release" position with the shuttle arms located such that a specimen carrier therebetween bypasses the first stop member and is moved downstream through the shuttle arms on the first conveyor;

said shuttle operable to a second "release" position with the shuttle arms located such that a specimen carrier therebetween bypasses the second stop member and is moved downstream through the shuttle arms on the second conveyor; and

a drive assembly on the frame for selectively moving the shuttle among the first "hold" position, the first "release" position and the second "release" position.

2. (Original)

The transfer apparatus of claim 1, wherein said shuttle is operable to a second "hold" position with the shuttle arms located such that a specimen carrier therebetween is in contact with the second stop member to thereby prevent downstream movement of a carrier on the second conveyor, and wherein said drive assembly additionally selectively moves the shuttle to the second "hold" position.

3. (Original)

The transfer apparatus of claim 1, wherein said frame further includes a platform thereon extending between the conveyors, the platform coplanar with the conveyors such that movement of the shuttle between the conveyors moves a specimen carrier within the arms of the shuttle across the platform to the opposing conveyor.

4. (Currently amended)

A transfer apparatus for shifting specimen carriers between two conveyors of a dual conveyor track, the track of the type having first and second parallel,

spaced apart conveyors with upper surfaces within a single plane, the conveyors operable in the same longitudinal direction, the transfer apparatus comprising:

a frame connected to the track for supporting an operable shuttle;

a shuttle operably connected to the frame to move transversely between the conveyors and generally perpendicular to the movement of specimen carriers on the conveyors;

a first stop member on said frame, projecting partially over the first conveyor;

a second stop member on said frame, projecting partially over the second conveyor;

said shuttle having a pair of parallel arms spaced apart a distance to receive a specimen carrier therebetween;

said shuttle operable to a first "hold" position with the shuttle arms located such that a specimen carrier therebetween is in contact with the first stop member, to thereby prevent downstream movement of a carrier on the first conveyor;

said shuttle operable to a first "release" position with the shuttle arms located such that a specimen carrier therebetween bypasses the first stop member and is moved downstream through the shuttle arms on the first conveyor;

said shuttle operable to a second "release" position with the shuttle arms located such that a specimen carrier therebetween bypasses the second stop member and is moved downstream through the shuttle arms on the second conveyor;

said shuttle also being operable to a second "hold" position with the shuttle arms located such that a specimen carrier therebetween is in contact with the second stop member to thereby prevent downstream movement of a carrier on the second conveyor;

a drive assembly on the frame for selectively moving the shuttle among the first "hold" position, the second "hold" position, the first "release" position and the second "release" position; and

~~The transfer apparatus of claim 2, further comprising~~

an electronic command module with a processor therein, said command module electrically connected to the motor and said processor programmed to selectively drive the motor to move the shuttle to a predetermined position.

5. (Original)

The transfer apparatus of claim 4, wherein said frame further includes a first sensor located to detect the presence of a carrier within the arms of the shuttle in the first "hold" position, said sensor electronically connected to the command module for transmitting detection information thereto.

6. (Original)

The transfer apparatus of claim 5, wherein said frame further includes a second sensor located to detect the presence of a carrier within the arms of the shuttle in the second "hold" position, said sensor electronically connected to the command module for transmitting detection information thereto.

7. (Original)

The transfer apparatus of claim 2, wherein said frame further includes a support plate mounted on the upper end thereof supporting said shuttle and said drive assembly.

8. (Currently amended)

A transfer apparatus for shifting specimen carriers between two conveyors of a dual conveyor track, the track of the type having first and second parallel, spaced apart conveyors with upper surfaces within a single plane, the conveyors operable in the same longitudinal direction, the transfer apparatus comprising:

a frame connected to the track for supporting an operable shuttle;

a shuttle operably connected to the frame to move transversely between the conveyors and generally perpendicular to the movement of specimen carriers on the conveyors;

a first stop member on said frame, projecting partially over the first conveyor;

a second stop member on said frame, projecting partially over the second conveyor;

said shuttle having a pair of parallel arms spaced apart a distance to receive a specimen carrier therebetween;

said shuttle operable to a first "hold" position with the shuttle arms located such that a specimen carrier therebetween is in contact with the first stop member, to thereby prevent downstream movement of a carrier on the first conveyor;

said shuttle operable to a first "release" position with the shuttle arms located such that a specimen carrier therebetween bypasses the first stop member and is moved downstream through the shuttle arms on the first conveyor;

said shuttle operable to a second "release" position with the shuttle arms located such that a specimen carrier therebetween bypasses the second stop member and is moved downstream through the shuttle arms on the second conveyor;

said shuttle also being operable to a second "hold" position with the shuttle arms located such that a specimen carrier therebetween is in contact with the second stop member to thereby prevent downstream movement of a carrier on the second conveyor;

a drive assembly on the frame for selectively moving the shuttle among the first "hold" position, the second "hold" position, the first "release" position and the second "release" position;

said frame further including a support plate mounted on the upper end thereof supporting said shuttle and said drive assembly; and

~~The transfer apparatus of claim 7, wherein~~

said shuttle arms ~~are~~ being suspended from a slide, ~~wherein~~ said slide ~~is~~ being slidably mounted along a linear rail, and ~~wherein~~ said motor ~~is~~ being connected to the slide to selectively move the slide along the rail.

9. (Original)

The transfer apparatus of claim 8, wherein said motor is suspended from the support plate on the frame.

10. (Original)

The transfer apparatus of claim 6, wherein said frame further includes a first exit sensor located downstream of the first sensor along the first conveyor, to detect the presence of a carrier that has exited the arms of the shuttle in the first "release" position, said sensor electronically connected to the command module for transmitting detection information thereto.

11. (Original)

The transfer apparatus of claim 10, wherein said frame further includes a second exit sensor located downstream of the second sensor along the second conveyor, to detect the presence of a carrier that has exited the arms of the shuttle in the second "release" position, said sensor electronically connected to the command module for transmitting detection information thereto.

12. (Currently amended)

A transfer apparatus for shifting specimen carriers between two conveyors of a dual conveyor track, the track of the type having first and second parallel, spaced apart conveyors with upper surfaces within a single plane, the conveyors operable in the same longitudinal direction, the transfer apparatus comprising:

a frame connected to the track for supporting an operable shuttle;

a shuttle operably connected to the frame to move transversely between the conveyors and generally perpendicular to the movement of specimen carriers on the conveyors;

a first stop member on said frame, projecting partially over the first conveyor;

a second stop member on said frame, projecting partially over the second conveyor;

said shuttle having a pair of parallel arms spaced apart a distance to receive a specimen carrier therebetween;

said shuttle operable to a first "hold" position with the shuttle arms located such that a specimen carrier therebetween is in contact with the first stop member, to thereby prevent downstream movement of a carrier on the first conveyor;

said shuttle operable to a first "release" position with the shuttle arms located such that a specimen carrier therebetween bypasses the first stop member and is moved downstream through the shuttle arms on the first conveyor;

said shuttle operable to a second "release" position with the shuttle arms located such that a specimen carrier therebetween bypasses the second stop member and is moved downstream through the shuttle arms on the second conveyor;

said shuttle also being operable to a second "hold" position with the shuttle arms located such that a specimen carrier therebetween is in contact with the

second stop member to thereby prevent downstream movement of a carrier on the second conveyor;

a drive assembly on the frame for selectively moving the shuttle among the first "hold" position, the second "hold" position, the first "release" position and the second "release" position; and

~~The transfer apparatus of claim 2, further comprising~~

a queue positioned upstream of said shuttle between said conveyors, for selectively restraining specimen carriers on the conveyors upstream of the shuttle and selectively releasing a specimen carrier from one of said conveyors in response to instructions from the command module, said queue electronically connected to the command module to receive instructions therefrom.

13. (Original)

The transfer apparatus of claim 12, wherein said queue includes:

a housing mounted between the conveyors;

a first retractable shaft projecting from a downstream end of the housing and over the first conveyor, to restrain a specimen carrier from movement along the first conveyor when extended;

a motor in said housing connected to said first shaft for selectively extending and retracting said shaft, said motor electrically connected to the command module and responsive to instructions from the command module;

a second retractable shaft projecting from a downstream end of the housing and over the second conveyor, to restrain a specimen carrier from movement along the second conveyor when extended;

said motor connected to said second shaft for selectively extending and retracting said shaft;

a first sensor adjacent said first shaft for detecting the presence of a specimen carrier restrained by the first shaft;

said first sensor electrically connected to the command module and adapted to transmit detection data to the command module; and

a second sensor adjacent said second shaft for detecting the presence of a specimen carrier restrained by the second shaft;

said second sensor electrically connected to the command module and adapted to transmit detection data to the command module.

14. (Original)

The transfer apparatus of claim 13, wherein said queue first and second shafts are connected together, such that the retraction of one shaft causes the extension of the other, whereby no more than one specimen carrier may be released at a time by the queue.

15. (Original)

The transfer apparatus of claim 13, wherein said queue further includes:

a first scanner adjacent said first shaft for scanning a specimen carrier restrained by the first shaft, to collect identification data therefrom;

said first scanner electrically connected to the command module and adapted to transmit identification data to the command module; and

a second scanner adjacent said second shaft for scanning a specimen carrier restrained by the second shaft, to collect identification data therefrom;

said second scanner electrically connected to the command module and adapted to transmit identification data to the command module.

16. (Original)

The transfer apparatus of claim 15, wherein said first scanner is activated to scan in response to the detection of the presence of a specimen carrier by the first sensor, and wherein the second scanner is activated to scan in response to the detection of the presence of a specimen carrier by the second sensor.

17. (Original)

The transfer apparatus of claim 16, wherein said queue further includes:

a third retractable shaft projecting from an upstream end of the housing and over the first conveyor, to restrain a specimen carrier from movement along the first conveyor when extended;

a second motor in said housing connected to said third shaft for selectively extending and retracting said shaft, said motor electrically connected to the command module and responsive to instructions from the command module;

a fourth retractable shaft projecting from an upstream end of the housing and over the second conveyor, to restrain a specimen carrier from movement along the second conveyor when extended;

said second motor connected to said fourth shaft for selectively extending and retracting said shaft;

a third sensor adjacent said third shaft for detecting the presence of a specimen carrier restrained by the third shaft;

said third sensor electrically connected to the command module and adapted to transmit detection data to the command module; and

a fourth sensor adjacent said fourth shaft for detecting the presence of a specimen carrier restrained by the fourth shaft;

said fourth sensor electrically connected to the command module and adapted to transmit detection data to the command module.